

FinTech: Considerations on How to Enable a 21st Century Financial Services Ecosystem

Jackson Mueller

August 2017

Executive Summary

Innovations within the financial services industry are changing how firms deploy and users interact with financial services and products. The proliferation of digital platforms across multiple financial verticals is uprooting traditional financial norms and processes. Advancements in computing power and mobile technology, for instance, are providing firms, both new and old, with additional opportunities and alternate approaches to meet the digital demands and realities of a 21st century global economy.

The speed and breadth of innovation, propelled by venture capital interest and billions of dollars of investment over the years, continues to pose challenges to regulatory authorities worldwide. Not only do regulators face the difficulty of staying abreast of the unprecedented changes occurring across the financial services ecosystem, but in also coming up with forward-looking approaches that balance the need for innovation with the need for oversight and protection.

As innovation in the financial services space continues to push up against legacy regulations, certain countries around the world have sought to create a more enabling environment for financial technology (FinTech) firms to develop and proliferate. While some countries continue to blaze trails on the FinTech regulatory frontier in their own way and for their own reasons, regulatory authorities are coming across various hazards along the way towards developing more tailored, responsive frameworks that can adjust

and respond to the frenetic pace of change. To address such challenges, a few regulatory bodies have sought to leverage a sandbox (i.e. a safe testing environment whereby regulators and innovative firms are able to engage to enhance their understanding of the product and service and how the current regulatory structure applies). Although there are real advantages that a sandbox can provide to both the regulator and the regulated, the perceptions of a sandbox need to change as does its current construct.

In this paper, the Milken Institute Center for Financial Markets explores the trails being blazed by certain countries around the world and the limitations and challenges regulatory authorities face in responding to change. In addition, the paper includes some considerations for regulators and policymakers, based on numerous interviews and private roundtable discussions, as they begin or continue to chart their own paths in developing appropriate responses to the pervasive changes occurring within the financial sector.

Some Countries Are Blazing the Trails of FinTech

The speed of global FinTech development has been nothing short of remarkable. Stretching from the U.K. to the Asia-Pacific region, the Middle East, Europe, and the Americas, countries have responded to innovations within the financial services space from different angles and at various speeds.

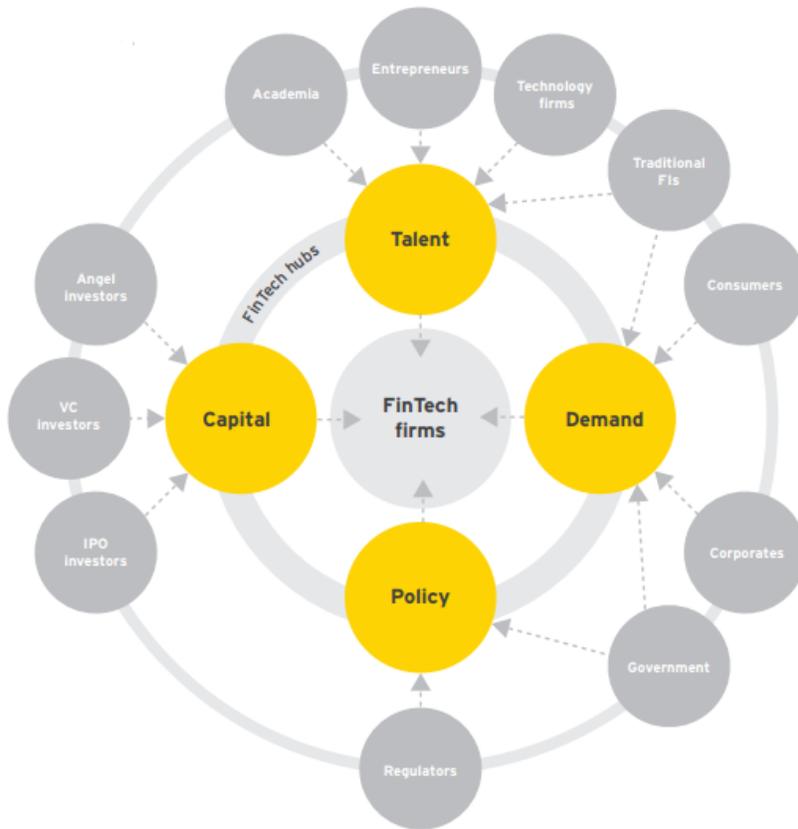
Efforts to develop a more conducive ecosystem to support platforms leveraging the internet of finance arguably began in the U.K. as far back as 2006. At that time, then Chancellor of the Exchequer George Osborne [remarked](#): “Here in Silicon Valley I have seen the future and at present Britain is not part of it.” Fast forward to 2014, when Osborne [laid out his plans](#) during the launch of Innovate Finance to make the U.K. the “FinTech capital of the world”—a position the U.K. achieved two years later [according to an EY report](#) from 2016.¹ The U.K. was arguably the lone country pioneering innovative regulatory frameworks to support an ecosystem of tech-driven platforms in an effort to establish itself as the hub for FinTech development, for a period of time. However—and as is seen in the FinTech space all-too-often—once one country (or firm) figures it out, others are quick to follow on the heels of success.

While the U.K. may have taken the first steps in laying the regulatory and policy foundations for more flexible, tailored approaches to financial innovation, other countries are not far behind. For instance, a recent report from the Global FinTech Hubs Federation [profiled 44 FinTech hubs](#) across a variety of countries, all with varying degrees of progress across a variety of indicators that make a hub (government support, innovation culture, proximity to expertise and customers, foreign start-ups, and, lest we forget, regulation).

When one breaks down the indicators further (as seen in Figure 1), there are a sizable number of actors that contribute to the formation and development of a FinTech hub.

¹ One could arguably award them the title prior to the 2016 EY report.

FIGURE 1. The FinTech Ecosystem



Note: Yellow: Attributes; Gray: Stakeholders
 Source: EY, U.K. FinTech: On the Cutting Edge

Starting in the U.K., the push to adapt legacy frameworks or develop entirely new methods to regulate FinTech then spread to the Asia-Pacific region where multiple countries continue to develop more forward-looking policies. These regulations are designed to foster a conducive environment for FinTech firms to operate, as well as to entice them to domicile in their respective country.

But the U.K. and countries in the Asia-Pacific region are not alone. Other countries have begun to blaze their own trails at different paces in order to remain competitive in the global financial marketplace and lay the groundwork for a financial services ecosystem fit for the 21st Century. In the last two years, countries in the Middle East and mainland Europe have sought to establish their own FinTech hubs and set themselves up as the preeminent thought leader in FinTech policy in the region. Similarly, certain countries in the Americas have set the starting pace for development of innovative policies and measures to guide and sustain the development of financial innovation within their respective economies.

Beyond focusing exclusively on internal, country-specific regulatory developments, regulators are also reaching across borders to find like-minded regulatory partners willing to share information on the latest FinTech developments and implement efforts to help domiciled FinTech firms expand to other

countries (Figure 2). Given the U.K. and Singapore’s early efforts to develop their hubs, it is not surprising to see both countries in the lead in joining together with other regulatory authorities from around the world.

FIGURE 2. Regulatory Collaboration

Location	Agreements with other regulators (in order of agreement date)
Abu Dhabi	1: Singapore
Australia	4: U.K., Singapore, Canada, Kenya
Canada	2: Australia, U.K.
China	1: U.K.
France	1: Singapore
Hong Kong	1: U.K.
India	1: Singapore
Japan	2: U.K., Singapore
Kenya	1: Australia
Singapore	8: U.K., Korea, India, Switzerland, Australia, Abu Dhabi, Japan, France
South Korea	2: Australia, U.K.
U.K.	7: China, Singapore, Korea, Australia, Hong Kong, Canada, Japan

Source: Deloitte & Global FinTech Hubs Federation, A Tale of 44 Cities: Connecting Global FinTech: Interim Hub Review 2017

How Regulatory Reasoning Drives Different Approaches to FinTech

Providing a brief overview of the various regions around the world engaged in efforts to adapt legacy regulatory and policy frameworks to fit the needs of a digital economy does not explain why policymakers and regulators have taken a more accommodative view and proactive approach to FinTech. With officials offering different explanations during the roundtable sessions, there’s no one-size-fits-all answer as to why governments have proceeded in the ways that they have.

In discussions with regulators and policymakers,² officials offered various reasons behind their efforts including:

- **Digital Competitiveness.** In the aftermath of the financial crisis it became apparent that the traditional financial system was not meeting the needs of small and medium-sized enterprises (SMEs) and consumers. In the U.K., [as previously discussed](#), the recognition among policymakers and regulators that the banking system itself was not working as desired resulted in the

² In addition to the private roundtable sessions held in April 2017, the Milken Institute also convened a private roundtable at its London Summit in December 2016 focused on SME finance. Views expressed during that session are also included in this paper. For more on the session, please click here: <http://www.milkeninstitute.org/events/conferences/summit/london-2016/panel-detail/6693>

government, parliament, and regulators taking a much more proactive approach to fostering greater competition in the U.K. financial services sector via digital platforms and channels.

FinTech, at the time, was viewed as one tool, amongst a broader set of tools, to achieve the government's digital competitiveness mandate to open the capital spigots and promote the development of a more competitive financial services ecosystem. Supplemental efforts, such as the implementation of the U.K. bank referral scheme, the open banking initiative, and the development of a more competitive U.K. payments system, seek to build on top of this digital competitiveness drive.

- **Technology Is and Will Remain a Part of Life.** For others around the table, it was the realization that technology will impact everything an individual does going forward that convinced officials of the need to adapt current regulatory processes and oversight. However, rather than focus on the business-to-consumer segment, some regulators are focusing exclusively on back-end- processing and the need to update incumbent infrastructure.
- **Inquiries from Industry Stakeholders.** Other officials noted that multiple inquiries from industry stakeholders defined a regulator's approach to financial innovation. In other words, firms were asking how they are regulated, placing the regulator in the position of having to determine what adjustments in current frameworks are needed, if any, to accommodate the various changes occurring in business operations and models within the financial services space.
- **Statutory Authority.** In certain countries, officials discussed how their approach to FinTech and financial innovation overall is dependent on the agency's statutory authority, which can also limit how proactive a regulator can ultimately be in addressing the challenges in offering innovative products and solutions to the marketplace.

FinTech initiatives launched by a regulatory body is an important step, but it is incorrect to assume that the launch of these initiatives means that the regulator is simply going to drop certain standards and become a cheerleader for financial innovation. Officials still have to uphold their responsibilities to the public and market integrity and, as such, they are limited in the ways they can respond to innovation.

Adapting Legacy Policy/Regulatory Frameworks to Evolving Technologies and Markets

Saying you want to become a FinTech hub is far easier than making concerted efforts to right-size legacy regulations to fit an evolving financial services sector. Among the challenges to approaching financial innovation and adapting legacy frameworks is:

- **Risk Tolerance and the Ability to Keep Pace with Innovation.** Regulatory officials simply do not have the capacity to stay abreast of the technological advancements and shifting business models in the financial services space, with the speed of penetration and adoption of

new technology of particular concern to regulators as it relates to the transfer of risk within the system.

Relying on consultation papers, requests for comment, and formal rulemaking in certain jurisdictions is not only an incredibly slow, laborious process, but upon completion can already be out of date.

In addition, and as one regulator noted, it used to be a lot easier to assess risk within the financial system given how siloed the sector used to be. Advancements in technology, however, have broken down these silos, with financial innovations disintermediating and democratizing traditional financial norms and processes. Previously defined and understood risks have evolved or been replaced with challenges posed by new technologies that require regulators to not only develop an understanding of these evolved or new-found risks but also to develop an appropriate resilience strategy to account for future risks.

As such, the fear of failure is prevalent among regulatory bodies. While many participants were generally supportive of the various financial innovations being offered and developed by both start-up and incumbent firms, if the product, service, or model finds itself in trouble, blame has a tendency to revert back to the regulatory body overseeing said product or service. In other words, the fear of failure has resulted in some regulators taking a more methodical approach to the regulation of FinTech, rather than a more proactive approach.

- **Lack of Skill Sets.** Regulatory agencies around the world face the difficulty of attracting and retaining talent in this space.

Chief among the concerns regarding the lack of skill sets is the ability to offer competitive salaries in comparison to what's being offered by tech companies located in various technology hubs across the world. For some regulators, limited control over staffing levels and agency budgets also hinder an agency's ability to attract top talent. Other regulators have been forced to provide competitive wages in order to attract personnel with the requisite skill sets that can enable more informed decision-making by the regulatory body.

- **Internal Culture.** A more holistic appreciation of FinTech's potential is made more difficult if the internal culture at a regulatory agency is not conducive to, or in favor of, regulatory adaptation.

For example, participants noted that RegTech can allow for more effective oversight and can provide regulators with additional tools to effectively manage the astonishing pace of change. But a regulator's adoption of RegTech solutions faces challenges if the internal culture at an agency is unwilling to adapt. While there is value in moving analog regulators and regulations into the digital world, the movement cannot solely be accomplished by technology, and will also require the very people and processes to change.

Depending on the regulator, making these sorts of changes to both processes and personnel could take considerable time that a lot of agencies simply do not have. The frequent arrivals and departures among appointed officials leading various agencies, as well as changes to the political environment within a country, make it difficult to establish a cohesive strategy towards developing appropriate regulatory frameworks conducive to FinTech that everyone within an agency from the top-down supports.

- **Trust.** Industry-participants, in particular, mentioned the frustrations of being in situations where it is difficult, if not terrifying, to speak with a regulator. The lack of communication or fear of communication can often lead to poorly drafted regulation or policies requiring a gaggle of lawyers to interpret, which at the same time can diminish a country's prospects of developing flexible, right-sized policies suitable for platforms—new and mature—to expand and grow.

Effective policies that can enhance the viability of a country's financial ecosystem to innovative products and services can only happen provided both incumbents and start-ups are engaged with regulators and policymakers, with both sides comfortable in sharing information and educating each other on the latest innovations, industry-driven efforts, regulatory oversight, and outlook.

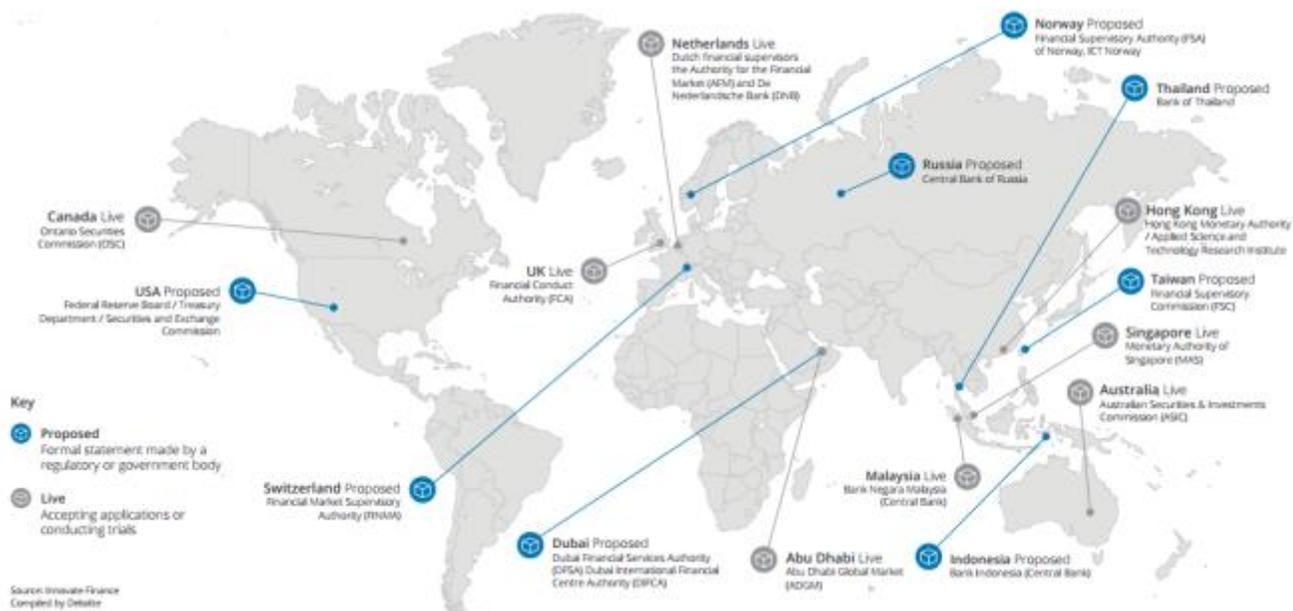
Enabling Policy/Regulatory Adaptation Through a Sandbox

The ability to keep pace with innovation, a regulator's risk tolerance towards innovation, the lack of skilled or informed regulatory personnel, an internal culture where stasis can often be the preferred course of action, and a trust shortfall between the regulated and regulator can present formidable challenges to regulators in efforts to bring regulation and policy into the 21st-century. For regulators and policymakers, the idea of a sandbox seems like the perfect fit to address the various trials and tribulations that regulatory authorities around the world have to contend with as they seek to respond to FinTech.

As of June 2017, there are roughly fifteen regulatory authorities located around the world that have announced some form of "regulatory sandbox."³

³ Estimates differ on the number of "regulatory sandboxes" depending on how organizations define/view a sandbox. As of the publication of this white paper, there are anywhere between 10-to-20 "regulatory sandboxes" in existence.

FIGURE 3. Map of Regulatory Sandboxes



Source: Innovate Finance

Like the term “FinTech”, the term “sandbox” has become more convoluted over the past few years with multiple regulatory bodies creating a diversity of sandbox models, not to mention the evolving nature of sandboxes from regulatory⁴ to industry⁵ to regional⁶.

In the private roundtable discussions held in London and Washington, D.C. participants discussed the potential of sandboxes. [Similar to our 2014 paper](#) where we included a list of potential positives and negatives associated with each approach, process, or principle that regulators could adhere to or utilize in developing a 21st-Century regulatory toolkit, Figure 4 takes a deeper dive into some of the potential benefits and drawbacks associated with the formation of regulatory sandboxes.

⁴ The U.K. Financial Conduct Authority launched its regulatory sandbox on May 10, 2016. Since then, the sandbox has successfully gone through its first cohort, revealed its second cohort as of June 15, 2017, and announced a request for submissions for a third cohort.

⁵ Industry sandboxes are a more recent development, with U.K.-based FinTech association, Innovate Finance, recently unveiling the first blueprint for an industry-led virtual sandbox for financial innovation.

⁶ The International Finance Corporation and the Monetary Authority of Singapore joined together on May 23, 2017 to announce the formation of the ASEAN Financial Innovation Network (AFIN)—composed of a regional network of financial institutions, regulatory bodies, and FinTech firms. The Network will also look into the feasibility of developing a regional, industry-led sandbox later this year.

FIGURE 4. Potential Positives and Negatives of Regulatory Sandboxes

Regulatory Sandboxes			
Focus	Potential Positives	Potential Negatives & Concerns*	Categorization**
Jurisdiction	Engagement early on between regulators and industry (start-up and incumbent); collective engagement and harmonized Guidance	<ul style="list-style-type: none"> Regulatory complexity in certain jurisdictions may limit how successful engagement is—does collective engagement lead to collective output? Uncertainty as to whether multiple regulators came away with the same viewpoint. 	Institutional, Organizational
Communication	Transparency between regulator and regulated	<ul style="list-style-type: none"> Uncertainty regarding what constitutes a “successful” sandbox, or a “successful” outcome/program/cohort. Will guidance posted on success/declines be enough to inform similar, like-minded firms as to how regulators view their models? 	Organizational, Operational
Purpose	A “safe space” whereby platforms can test their innovative product or service under the guise of a regulator, or multiple regulatory bodies	<ul style="list-style-type: none"> Sandboxes become susceptible to concerns that this is a part of a regulatory race to the bottom. Accusations that firms involved will not be subject to the same oversight and standards imposed on similar firms situated outside the sandbox. What does the safe space do, and who is it for? 	Institutional, Operational
Proof of Concept	Live testing environment	<ul style="list-style-type: none"> Concerns that those affected during the tests will not be compensated. Uncertainty as to who is ultimately responsible. Who bares the risk and costs? The company? The regulator(s)? The consumer? 	Operational, Financial
Evidence-based	Obtain data-driven, empirical information	<ul style="list-style-type: none"> Unclear whether the use of this data will sway leadership of regulatory agencies to act (and in what ways they will act). Who is the audience we’re trying to inform: Regulators? Policymakers? The public? 	Operational
Transparent Access	Public promotion (media exposure)	<ul style="list-style-type: none"> Accusations of regulatory bodies favoring one company over similar, like-minded platforms. Sandbox is viewed as a way to attract higher amounts of capital from VCs, angels, institutions, rather than view the process based on original intent/mission 	Operational

* Not all potential positives and negatives related to the formation and operation of a sandbox have been listed in this chart. This list merely reflects the views of roundtable participants.

** In this column, we have assessed where the identified positives and negatives fit within the sandbox structure. Institutional: How this effort works within the government/ other agencies, as well as stakeholder coordination; Organizational: The resources, human capacity to follow-through to fruition; Operational: The step-by-step processes, or set of protocols to ensure the sandbox is executed successfully; Financial: The costs resulting from the establishment and processes of a sandbox.

Beyond the potential of a sandbox, participants also brought up a number of considerations that merit attention:

1. **A sandbox should not be viewed as the panacea for developing 21st-century regulatory frameworks.** Rather, it is a tool, among an arsenal of tools that regulators and lawmakers can deploy in efforts to craft sound regulations and policies that seek to address the conflict between legacy regulation and financial innovation.

In the U.S., regulators have at their disposal no-action letters, waiver authority, and regulatory interpretations that can offer firms greater clarity, legal certainty, and guidance. Whether those tools are suitable, and ultimately effective in a complex regulatory environment where regulatory jurisdictions may overlap is a separate matter for discussion. Industry stakeholders can only be as innovative as their least innovative regulator.

In addition, various U.S. federal regulators have also launched financial innovation arms, including the Consumer Financial Protection Bureau's (CFPB) Project Catalyst initiative, the Office of the Comptroller of the Currency's Office of Innovation, and the Commodity Futures Trading Commission's LabCFTC. All three regulators continue to hold office hours providing FinTech firms with an additional avenue to engage with regulators. This form of engagement is critical as it allows regulators to stay close to innovative developments in the financial services sector that can help inform policy initiatives and directives.

2. **Understanding if high utilization is a desired end or temporary means to a more appropriate regulatory statue can help frame what success looks like.** Should the success of a sandbox be measured by the number of platforms arriving at the front door? As a few participants noted, the best way to measure the regulatory environment, in regards to innovation, is how few applications arrive on the doorstep. Simply put, a sizeable number of applications from a variety of firms looking to take part in the sandbox suggests that there is something wrong with the way the industry is regulated, to begin with. Whereas a few applicants send a stronger signal that the regulatory environment, as is, provides enough clarity and flexibility for firms to operate under without having to rely on a sandbox process for certainty.

That said, given the fact that sandboxes are still largely in the early stages of development and use, it is not as surprising to hear about applicants flocking to sandboxes simply because they lack an understanding of the process, what it entails, or whether their service or product fits within the current regulatory environment. However, if applications are still coming down the pipeline after a sandbox has been in place for some time, that signals a broader problem related to the regulatory environment and/or the sandbox process itself.

3. **Developing a conducive testing environment may not require a sandbox, nor regulatory approval depending on the circumstances.** It should also be pointed out that testing has and will continue to be done outside a sandbox. For instance, the U.S. Securities and

Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA) launched the Tick Size Pilot Program⁷ in an effort to study how widening the minimum quoting and trading increment will affect small capitalization stocks. The CFPB announced a trial disclosure program⁸ to examine innovative approaches to delivering disclosures that are currently not allowed under existing regulations.

Regulators also stressed the importance of distinguishing between a commercial experiment that requires no oversight and a potentially risky experiment that would be more conducive to a sandbox environment. As multiple regulators made clear, if a financial institution (or anyone else for that matter) is seeking to develop a test or pilot, provided they have complied with existing rules, there is no need to call on a regulator to “green light” a project. However, if it is unclear as to whether certain regulations may apply under a testing scenario envisioned by a firm, a sandbox environment may make more sense.

4. **Regulatory sandboxes need to evolve.** If I’m a large bank or a clearing house, particularly with an army of lawyers at my disposal, I already know how to approach authorities and engage. But the same can’t be said for start-up firms who may lack an understanding of how to approach regulatory authorities, who to approach, and what the various regulatory tools are at their disposal.

But does that mean a sandbox is the most appropriate form of engagement? There is tension between two statements in particular: “I wish I were allowed to do this” and “I think I am allowed to do this.” In regards to the former, regulators may simply say “No,” or engage in a more technical conversation with innovators to ensure that the principles behind a rule are truly reflected in the written rule itself. In regards to the latter, that points innovators more toward the direction of a sandbox approach where regulators will provide the opportunity for innovators to test their assumption under relevant protections.

But if sandboxes are merely being implemented to allow firms to test their assumptions, are we actually moving the ball forward toward enacting right-sized regulatory policy fit for the realities of the 21st-century economy?

As one participant noted, sandboxes in existence today can merely be characterized as “process sandboxes”—a more, check-the-box approach whereby firms are put through a process where regulators and innovators engage in answering whether “I think I am allowed to do this” is true. To this end, process sandboxes have solved a very small part of the problem innovators face (e.g. engagement), without focusing enough on solving the underlying infrastructure complexities embedded in financial ecosystems that affect the performance and potential of front-end applications.

⁷ <http://www.finra.org/investors/tick-size-pilot-program>

⁸ <https://www.consumerfinance.gov/about-us/project-catalyst/trial-disclosure-program/>

Similarly, there needs to be a two-way conversation between innovators and regulators. Sandboxes can be a great place for early-stage startups to test new ideas, but they should also play an important part in fostering iterative regulatory development. A regulatory sandbox is a *regulatory sandbox*, not an industry sandbox. As such, sandboxes need to evolve from being largely process-based where firms are shuffled through a check-the-box type of process to becoming physical sandboxes with the end goal resulting in changes to current policies through formal rulemaking or guidance that allows for industry to utilize alternative tools and methods that current policies prevent.

Conclusion

What's clear is that analog regulations built for the traditional banking space are not conducive to fostering innovation in a financial services industry turned digital. What's less certain is how regulators and lawmakers will respond and how this response will affect current financial regulatory structures and the long-term growth, development, and sustainability of FinTech in countries or regions.

That said, the pace of technological change necessitates a rethinking of current regulatory structures, no matter the various trials and tribulations that officials will face in attempting to evolve decades old frameworks to reflect the present-day financial services industry and the innovations coming from within and outside of the market.

Simply developing a regulatory sandbox is not the solution, but a tool that can and should be utilized provided both parties—the regulator and the regulated—benefit from the outcome of the process (i.e. engagement, enlightenment in regards to the technology and regulatory process, and formal changes to current policy or regulatory frameworks based on the findings from the sandbox process.)

Overall, developing a FinTech hub requires more than just a press release or a news soundbite. There has to be an impetus for change that leads officials from the top-down to wade into uncharted regulatory territory. No one regulatory approach is the cure-all given the variety of financial services ecosystems around the world and the complexity, or lack thereof, of the various regulatory structures and bodies in place.

Such an undertaking presents a significant challenge to regulators and policymakers, but one that is surmountable. Just ask the 44 hubs, the majority of which reside in the countries listed in the appendix, for yourself.

Appendix: Select FinTech Developments Worldwide June 2016-June 2017⁹

Country	FinTech-Related Developments
Australia <i>Players include: Australian Securities & Investments Commission (ASIC)</i>	<ul style="list-style-type: none"> ▪ Published the 2017 Budget which includes a number of FinTech-conducive measures ▪ Introduced class waivers allowing eligible FinTech businesses to test certain specific services without holding a an Australian financial services or credit license ▪ Published a report updating the public on ASIC’s Innovation Hub and approaches to FinTech and RegTech ▪ Released guidance for start-ups and licensed firms seeking to use distributed ledger technology ▪ The House of Representatives Standing Committee on Economics published recommendations that would require banks to open access to customer and small business data ▪ FinTech Australia announces FinTech festival, Intersekt, taking place in late October
Bahrain <i>Players include: Economic Development Board; Central Bank</i>	<ul style="list-style-type: none"> ▪ Announced the launch of a venture capital fund to support FinTech ventures, as well as the creation of a regulatory sandbox later in the year ▪ The central bank launched a regulatory sandbox ▪ The Economic Development Board, the Singapore FinTech Consortium, and the Dubai-based asset management and advisory firm Trucial Investment Partners, joined forces to establish a FinTech ecosystem and conducive regulatory environment in the country
Canada <i>Players include: Ontario Securities Commission; Canadian Securities Administrators; Department of Finance</i>	<ul style="list-style-type: none"> ▪ The Ontario Securities Commission (OSC) officially unveiled a regulatory sandbox, the OSC Launchpad ▪ Alberta's Securities Commission adopted rules to enhance crowdfunding for businesses to raise capital across the country ▪ The government released Budget 2017 which includes a number of provisions related to FinTech ▪ The Canadian Securities Administrators launched a regulatory sandbox initiative ▪ The Department of Finance Canada launched consultations to review current federal legislative and regulatory framework for the financial sector ▪ Payments Canada announced sweeping changes to the country's payments infrastructure and financial transaction rules ▪ Autorité des Marchés Financiers announced the formation of its FinTech Lab
China <i>Players include: PBOC; Banking and Regulatory Commission</i>	<ul style="list-style-type: none"> ▪ Released rules governing peer-to-peer lending ▪ Released a report on the development of rules covering blockchain ▪ Amended anti-money laundering requirements for virtual currency exchanges ▪ Established a committee to oversee FinTech developments
European Union <i>Players include: European Commission; European Parliament; European Central</i>	<ul style="list-style-type: none"> ▪ The European Parliament held a nonbinding vote on a resolution calling for a light-touch approach to the regulation of virtual currencies and creation of a task force under the European Commission to monitor virtual currencies ▪ The European Commission formed an internal task force focused on FinTech ▪ The European Banking Authority (EBA), the European Insurance and Occupational Pension Authority, and the European Securities and Markets Authority (ESMA) released a discussion paper on the use of big data by financial institutions ▪ ESMA released a report on the application of distributed ledger technology to financial markets

⁹ The author would like to thank Joseph Jammal, Summer Associate at the Milken Institute Center for Financial Markets, for his help in putting this chart together. The chart provides only a sample of FinTech-related developments that have occurred in each listed country. For more in-depth coverage, [please sign up to FinTech in Focus](#).

<p><i>Bank, ESMA, EBA, etc.</i></p>	<ul style="list-style-type: none"> ▪ The European Parliament published a state of play on Europe's crowdfunding marketplace ▪ The EBA published a final draft of regulatory technical standards on strong customer authentication, among other things ▪ The European Commission published a midterm review of its Digital Single Market strategy ▪ The European Commission published a report on FinTech and its potential for the European financial services sector
<p>Finland</p> <p><i>Players include: Ministry of Finance</i></p>	<ul style="list-style-type: none"> ▪ The Ministry of Finance formed an internal FinTech working group to monitor and enhance the conditions of financial service evolution ▪ The Crowdfunding Act covering investment-based crowdfunding went into force September 1, 2016
<p>France</p> <p><i>Players include: Financial Markets Authority; Central Bank</i></p>	<ul style="list-style-type: none"> ▪ The Financial Markets Authority announced the formation of its FinTech, Innovation and Competitiveness division within the Regulatory Policy and International Affairs Directorate ▪ Announced the launch of the FinTech Forum - a new body for consultation and dialogue with the FinTech industry ▪ Regulatory reforms to extend the scope of securities and loans that can be offered through crowdfunding platforms went into effect in October ▪ France and Germany announce plans to form a €1 billion fund to support European start-ups and boost its digital economy ▪ France's central bank opened a lab to work with blockchain technology start-ups ▪ The Paris FinTech Forum was held in late January
<p>Germany</p> <p><i>Players include: Federal Financial Supervisory Authority (BaFin), Ministry of Economic Affairs and Energy</i></p>	<ul style="list-style-type: none"> ▪ FinTech Group AG and South Korean-based Finotek signed a cross-licensing deal, marking the first European-Asian FinTech joint venture ▪ The Federal Ministry of Economic Affairs and Energy launched the Digital Hub Initiative in an effort to establish digital hubs across the country ▪ The government announced its intention to create a state-owned enterprise venture capital fund to address the €500 million gap in Germany's venture capital system
<p>Hong Kong</p> <p><i>Players include: Hong Kong Monetary Authority (HKMA); Securities and Futures Commission</i></p>	<ul style="list-style-type: none"> ▪ Hong Kong Monetary Authority (HKMA) launched a supervisory sandbox for FinTech ▪ HKMA released a white paper covering distributed ledger technology ▪ HKMA and the Applied Science and Technology Research Institute launched the FinTech Career Accelerator Scheme ▪ Financial Services Development Council released two reports: The Future of FinTech in Hong Kong, and Hong Kong—Building Trust Using Distributed Ledger Technology ▪ The FinTech Association of Hong Kong officially launched ▪ Hong Kong FinTech Week: October 23-27, 2017
<p>India</p> <p><i>Players include: Reserve Bank of India; Securities and Exchange Board of India (SEBI)</i></p>	<ul style="list-style-type: none"> ▪ An eleven-member committee, established by former Finance Secretary Ratan Watal, was formed to overhaul India's digital payments framework. A final report was published in December 2016 ▪ The National Payments Corporation of India was given clearance by the Reserve Bank of India (RBI), making unified payments interface (UPI) a reality in the nation, with twenty-one banks involved in the first phase ▪ The Commerce and Industry Ministry formed an eight-member task force to enhance the nation's approach to innovation ▪ The committee of chief ministers on demonetization submitted recommendations to Prime Minister Narendra Modi on efforts to foster a digital economy

	<ul style="list-style-type: none"> ▪ Reserve Bank of India stated its opposition to the creation of a separate payments regulator ▪ SEBI formed a FinTech advisory committee ▪ State Bank of India formed a FinTech team to explore opportunities within the space ▪ Aadhaar Pay went live in mid-April ▪ Airtel becomes first payments bank to launch (November 2016) after RBI approved 11 entities to set up payments banks back in 2015. ▪ RBI finalized guidance related to peer-to-peer lending platforms ▪ Ministry of Electronics and Information Technology announced the formation of the Digital Payments Security Alliance ▪ Demonetization: India's government makes Rs500 and Rs1,000 currency notes illegal
<p>Indonesia</p> <p><i>Players include: Financial Services Authority (FSA); Bank of Indonesia</i></p>	<ul style="list-style-type: none"> ▪ The Bank of Indonesia announced the opening of a FinTech office that also oversees the regulatory sandbox ▪ The FSA launched a web portal that compiles all banking regulations ▪ The FSA released rules covering peer-to-peer lending ▪ The FSA formed the Digital Financial Innovation Unit responsible for the regulatory sandbox, research, and the FinTech Permit and Monitoring Unit
<p>Japan</p> <p><i>Players include: Financial Services Agency; Ministry of Economy, Trade and Industry</i></p>	<ul style="list-style-type: none"> ▪ The Japanese Cabinet approved bills that include official recognition of virtual currencies as asset-like values ▪ Financial Services Agency established a Payments Council on Financial Innovation ▪ Ministry of Economy, Trade and Industry, in partnership with Nomura Research, published findings from a survey covering blockchain technology and its potential ▪ A joint research project between Bank of Japan and the European Central Bank studying the application of distributed ledger technologies for market infrastructure purposes was announced ▪ The Ministry of Economy, Trade and Industry has released a blockchain assessment toolkit
<p>Luxembourg</p> <p><i>Players include: Ministry of Finance</i></p>	<ul style="list-style-type: none"> ▪ The FinTech Zone is launched—the first independent FinTech center to operate in the country ▪ The Luxembourg House of Financial Technology officially launched ▪ The Luxembourg Institute of Science and Technology announced the creation of the Financial Innovation Technology and Systems Center
<p>Malaysia</p> <p><i>Players include: Bank Negara Malaysia; Securities Commission</i></p>	<ul style="list-style-type: none"> ▪ The country becomes the first ASEAN country to regulate the peer-to-peer lending space ▪ The central bank released a discussion paper on the formation of a regulatory sandbox in August 2016, with additional details regarding its formation presented in October 2016 ▪ The Securities Commission announced licensing and conduct requirements related to digital investment management ▪ The Securities Commission signed a Memorandum of Understanding (MoU) with the country's research and development center to develop a capital market advanced analytics platform ▪ The central bank issued a call for input through its FinTech Hacks initiative on ideas to improve the financial services sector
<p>Singapore</p> <p><i>Players include: Monetary Authority of Singapore (MAS)</i></p>	<ul style="list-style-type: none"> ▪ The country is seeking to build a new identity system that could resemble Estonia's digital identity system ▪ Currently piloting a know-your-customer (KYC) utility for financial services, the first stage of a national rollout of electronic KYC ▪ Involved with two other government offices and four banks on a pilot project to simplify online banking transactions using the government's MyInfo service ▪ Announced the successful conclusion of the proof-of-concept project to conduct domestic interbank payments using distributed ledger technology

	<ul style="list-style-type: none"> ▪ Announcement of 100 problem statements— a list of financial problems that can be solved by technology ▪ Announced the formation of an International Technology Advisory Panel to advise MAS on FinTech developments ▪ MAS and the International Finance Corporation signed a memorandum of cooperation to develop an ASEAN FinTech hub ▪ MAS partnered with blockchain consortium, R3, to support the development of the R3 Asia Lab ▪ Released a consultation paper on conducive regulatory frameworks for firms interested in offering digital advisory services ▪ Monetary Authority of Singapore released guidelines for its FinTech regulatory sandbox ▪ Completed Phase one of Project Ubin, an attempt to tokenize the Singapore dollar through the Ethereum blockchain ▪ Ministry of Communications and Information announced the creation of AI.SG—a national program to boost Singapore's AI capabilities ▪ Proposed rule changes that will facilitate bank investment in digital payment platforms to enable better competition with non-bank firms ▪ Published a consultation paper on proposals to simplify the regulatory regime applicable to managers of venture capital funds ▪ The Committee on the Future Economy released a report containing seven strategies to address the various challenges the country may face as it moves forward in the 21st century ▪ Singapore FinTech Festival: November 13-17
<p>Sweden</p> <p><i>Players include: Financial Supervisory Authority; central bank</i></p>	<ul style="list-style-type: none"> ▪ The government is conducting tests to use blockchain technology for land registry, which concluded its second phase of testing in April ▪ Government established a special ten-person committee to examine the legal and regulatory environment for investment crowdfunding, with a report due by December 2017 ▪ Swedish digital payments platform, Klarna received a banking license from the Swedish Financial Supervisory Authority.
<p>Switzerland</p> <p><i>Players include: Financial Market Supervisory Authority</i></p>	<ul style="list-style-type: none"> ▪ Switzerland's cabinet approved "light-touch" regulations covering FinTech, with draft legislation expected to be sent to parliament by mid-2017 ▪ The Federal Council has initiated a consultation on proposed amendments to the Banking Act and Banking Ordinance that "aim to regulate FinTech and other firms which provide services outside normal banking business according to their risk potential" ▪ Government-backed virtual currency and blockchain group, the Crypto Valley Association, was launched
<p>Thailand</p> <p><i>Players include: Bank of Thailand</i></p>	<ul style="list-style-type: none"> ▪ The government established the Ministry of Digital Economy and Society. The Digital Economy and Society Ministry is expected to establish a \$150 million Digital Economy Fund in September to support domestic start-ups ▪ Bank of Thailand announced that its regulatory sandbox would be made available to banking institutions in the first quarter of 2017, with nonbanks allowed to apply in the second quarter ▪ The national stock exchange is expected to launch a blockchain-based marketplace for start-ups in the third quarter 2017 ▪ Bank of Thailand released a regulatory framework for the country's P2P lending industry
<p>UAE: Abu Dhabi</p>	<ul style="list-style-type: none"> ▪ A consultation paper was published calling for, among other things, a regulatory laboratory for FinTech firms that would resemble the FCA's sandbox initiative

<p><i>Players include: Abu Dhabi Global Market (ADGM)</i></p>	<ul style="list-style-type: none"> ▪ Partnership with GlassQube Business Centre Services to explore the creation of a FinTech cluster ▪ Debuts FinTech RegLab designed to tailor the regulatory regime to support FinTech formation and foster innovation ▪ Introduced a risk proportionate regulatory framework for managers of venture capital funds ▪ To hold a FinTech Summit in October
<p>UAE: Dubai</p> <p><i>Players include: Financial Services Authority; International Financial Center</i></p>	<ul style="list-style-type: none"> ▪ Consultations published on the regulation of loan-based and investment-based crowdfunding ▪ Consultation released covering the regulation of FinTech ▪ Dubai International Financial Center and Accenture joined together to launch the DIFC FinTech Hive ▪ FinTech outreach session held focused on current conditions faced by FinTechs looking to establish themselves in the region ▪ Announced that FinTech firms will be allowed to apply for an Innovation Testing License ▪ To hold a FinTech Summit in October
<p>U.K.</p> <p><i>Players include: Financial Conduct Authority (FCA), Bank of England, HM Treasury</i></p>	<ul style="list-style-type: none"> ▪ The Bank of England launches FinTech accelerator ▪ The Bank of England published a blueprint for a renewed real-time gross settlement service ▪ The Payment Systems Regulator (PSR) and the Bank of England released a paper calling for the consolidation of three retail payment systems—Bacs, Cheque, and Credit Clearing Company, and the Faster Payments Service—into one retail payment system operator ▪ The Payments System Regulator (PSR) released its final review covering access to the U.K. payments system, as well as reports covering the U.K. payments infrastructure ▪ The Payments Strategy Forum, tasked by the U.K. Payments Systems Regulator to unlock competition in the payments space, released a report identifying strategies to move the U.K. payments system into the 21st century ▪ The British Business Bank continues to make investments in online lending platforms to support SME finance ▪ The FCA announced a call for input on the post-implementation review of crowdfunding rules that came into force in 2014 ▪ The FCA launches robo-advice unit ▪ The FCA published a summary of the feedback to the FCA’s call for input on RegTech ▪ British Standards Institution (BSI) released A Roadmap for Fintech Standards ▪ The FCA published a feedback statement following its call for input covering big data’s role in the insurance marketplace ▪ U.K. Competition and Markets Authority released its final report covering competition in the retail banking market and proposed a set of reforms to open retail banking to smaller and newer banks ▪ Innovate Finance—the U.K. FinTech trade body—announced a call for input on an industry-led sandbox initiative ▪ Treasury publishes a white paper covering regulatory innovation
<p>U.S.</p> <p><i>Players include: Federal banking and supervisory bodies; independent regulatory</i></p>	<ul style="list-style-type: none"> ▪ Federal Regulators: <u>Fed:</u> Federal Reserve governor Lael Brainard announces that the Fed has established a working group “that is engaged in a 360-degree analysis of financial innovation across the broad range of our responsibilities.” The Federal Reserve releases progress report on efforts to improve the U.S. payments infrastructure. <u>OCC:</u> Published its Responsible Innovation Framework, a white paper on FinTech charters, and supplemental guidance related to third-party relationships with chartered banks. OCC Director Tom Curry stepped down May 5, 2017. <u>CFPB:</u> Published information requests on consumer access to financial data, the use of

<p><i>agencies or governing bodies; Congress; state securities/banking agencies</i></p>	<p>alternative data and modeling techniques in the credit process, small business data collection, and its first-ever report on Project Catalyst. <u>SEC</u>: Published final rules updating intrastate crowdfunding exemptions, held a FinTech Forum in November 2016, published a guidance update covering automated advice platforms, and released a report on securities-based crowdfunding under Title III of the JOBS Act. <u>FDIC</u>: Released guidance related to third-party lending. <u>CFTC</u>: launches LabCFTC FinTech initiative. <u>FTC</u>: Held a series of forums on FinTech. <u>FSOC</u>: Released its 2016 annual report, which included coverage on marketplace lending and distributed ledger technology</p> <ul style="list-style-type: none"> ▪ Executive: The Obama Administration publishes a white paper, A Framework for FinTech ▪ Legislative: The House Energy & Commerce Committee continues to hold a series of hearings on the latest innovative disruptions to industry; The House of Representatives passed the first-ever FinTech resolution on a vote of 385 to 4; Sens. Jeff Merkley and Sherrod Brown sent a letter to the heads of top U.S. financial regulators to explain how they are responding to FinTech innovations and developments (also sent a letter expressing concern regarding the OCC’s FinTech charter); thirty-three House Republicans sent a letter to the OCC urging it not to rush on finalizing special-purpose charters for FinTech firms; Rep. Emanuel Cleaver (D-Mo.) has submitted multiple letters to regulators concerned with FinTech lending platforms; Rep. Patrick McHenry, R-N.C., unveiled HR 6118, the Financial Services Innovation Act of 2016 as part of the Innovation Initiative; Reps. Mick Mulvaney (R-S.C.) and Jared Polis (D-Colo.) announced the launch of the Congressional Blockchain Caucus ▪ State efforts: The Conference of State Bank Supervisors announces Vision 2020, including the formation of a FinTech advisory panel; New York State and California launch inquiries into various online lending platforms; the Illinois and Delaware blockchain initiatives launched ▪ Other: National Automated Clearinghouse Association (NACHA), the governing body over the ACH network in the U.S., announced the launch of Same Day ACH
-----------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Acknowledgments

The author would like to thank all of the attendees who participated in the April 11 and April 21 private roundtable sessions held in London, U.K. and Washington, D.C. covering regulatory efforts to foster financial innovation and regulatory sandboxes. The author would also like to thank Innovate Finance for allowing the Institute to hold a private roundtable on the sidelines of the Innovate Finance Global Summit.

About the Author

Jackson Mueller is an associate director at the Milken Institute's Center for Financial Markets, where he leads the FinTech program. Prior to joining the Institute, Mueller was an assistant vice president at the Securities Industry and Financial Markets Association (SIFMA), where he focused on a broad range of financial services-related policies, provided legislative and regulatory updates to executive-level government relations staff, and conducted analysis of key issues relevant to SIFMA's members. He received his bachelor's degree in political science from the University of Richmond and a master's degree in public policy from American University. He works at the Institute's Washington, D.C. office.

About the Center for Financial Markets

Based in Washington, D.C., the Milken Institute Center for Financial Markets promotes financial market understanding and works to expand access to capital, strengthen—and deepen—financial markets, and develop innovative financial solutions to the most pressing global challenges.

About the Milken Institute

The Milken Institute is a nonprofit, nonpartisan think tank determined to increase global prosperity by advancing collaborative solutions that widen access to capital, create jobs, and improve health. We do this through independent, data-driven research, action-oriented meetings, and meaningful policy initiatives.

©2017 Milken Institute

This work is made available under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License, available at creativecommons.org/licenses/by-nc-nd/3.0/